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TONY SHAW | 05/24/2010



Semantic Technology and the Health Care Revolution

BIO

Creating greater collaboration, visibility, and accountability in the nation's health care system

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A woman in Southern California's Inland Empire, age 53, is suffering from an unidentified neurological disorder. It started as an odd numbness in her left arm, and now she feels an uncomfortable, persistent tingling and prickling pain from the bottom of her feet to the top of her eyebrows. She feels these symptoms to varying degrees at all times of the day and night.

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The woman brought her symptoms to the attention of her doctor who, baffled, sent her to a specialist. The specialist ran a number of tests and ruled out all the most likely possibilities, but like the woman's general practitioner, the specialist was left puzzled. The specialist presented the woman's case to a panel of leading neurologists from the state's top hospitals, but no one could make a diagnosis or offer an effective plan of treatment.

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This woman's case is not a hypothetical situation, and unfortunately, it is not a unique situation.

It must be noted that this particular woman has comprehensive health coverage, regular access to health services, and has received excellent care from all the medical professionals who have worked to assist her. She has received the best care that is currently available. However, informed only by the woman's symptoms and a plethora of negative test results, no one has had the right information or experience to help her.

But the difficulties of this woman's condition could soon be a thing of the past. Where limited resources have previously left her without answers, new technologies are being pioneered to exponentially increase her doctor's access to medical knowledge and in turn, the chance of finding a cure.

These technologies are being developed by the same people who originally created the World Wide Web. They are called semantic technologies, and are currently being explored, improved, and applied to health care in a movement known as Health 3.0.

But what exactly are semantic technologies and how can they improve our nation's health?

The word "semantic" is broadly defined as "meaning," and in the context of the internet, the term is used to describe how computers can understand the meaning of words and text, which could be on a page or in a database.

Traditionally, computers have not been able to understand the meaning of the words and numbers that they process; but with semantic technologies, they can start to do so. This is not to suggest that computers are intelligent, but when they have enough information from which to work, they can make connections between different pieces of information that wouldn't otherwise be brought together. In a health care environment, this is very valuable because it's simply not possible for any one medical practitioner to have enough knowledge to recognize every symptom or pattern of illness and connect it to every available cure.

Because computers can process information much faster than people, semantic technologies for data linking can greatly reduce the time to make the correct diagnosis and perhaps curtail the patient's uncertainty and pain from months to a few days or hours.

The opportunities for combining and analyzing vast amounts of data are enormous. Just imagine what would be possible if electronic health records (EHRs) could be matched with public and private medical research, health-trend data, health care professional profiles, and all the latest medical research. In this case, the Southern California woman could be matched to the right physician immediately, have her treatment measured against national averages, and be tapped into the latest research almost immediately.

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ABOUT THE AUTHOR

Tony Shaw is the publisher of the [Semantic Universe](#) journal, and educational chairman of SemTech, the world's largest semantic technology conference. Shaw has broad expertise in the assessment of emerging technologies and facilitates the elite TTI/Vanguard strategy forum for chief technical officers.

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